

Assessing Physician Response Rate Using a Mixed-Mode Survey

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Abstract

Background. It is important to minimize time and cost of physician surveys while still achieving a reasonable response rate. Mixed-mode survey administration appears to improve response rates and decrease bias. A literature review revealed physician response rates to mixed-mode surveys averaged about 68%. However, no identified studies used the combination of e-mail, fax, and telephone. The purpose of this study was to evaluate physician response rates based on surveys first administered by e-mail, then fax, then telephone.

Methods. Surveys initially were administered by e-mail to 149 physicians utilizing SurveyMonkey®. Two follow-up reminder e-mails were sent to non-respondents at two-week intervals. Surveys then were faxed to physicians who had not responded. A follow-up fax was sent to non-respondents one week later. Finally, phone interviews were attempted with physicians who had not responded by e-mail or fax; each physician was called at least twice.

Results. Of the 149 eligible physicians, 102 completed the survey for a response rate of 68.5%. Of those who responded, 49 (48%) responded by e-mail, 25 (24.5%) by fax, and 28 (27.5%) by phone. Mode of response did not differ by gender, specialization, or years in practice. In addition, mode of response was not related to the primary study question, physician willingness to use text messaging for immunization reminders.

Conclusions. This mix of survey methodologies appeared to be a feasible combination for achieving physician responses and may be more cost effective than other mixed methods.

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Introduction

Due to demanding schedules, physicians remain a difficult population from whom to obtain reliable and valid findings. Previous attempts to survey this population using only e-mailed surveys¹ has resulted in low response rates. Using a mixed-mode method for conducting physician surveys may yield higher response rates and reduce the risk of eliminating members of the population who do not use certain technologies regularly.²

To identify the most effective combination of methods for physician surveys, a literature review was conducted. PubMed, PsychInfo, and Google Scholar were searched for articles with “survey response rate(s)” in the title and were

limited to English articles published in the last 10 years. “Physician” was not included to avoid missing articles regarding specialties, such as “family medicine”. The search resulted in 149 articles, 103 unduplicated. Titles and abstracts were evaluated by two independent reviewers and articles describing non-physicians were removed (n=70). Full text was reviewed on the remaining 33 articles and 26 were removed for the following reasons: (1) non-physician respondents, (2) review article, and (3) single method of delivery. Review of the references of the seven remaining articles³⁻⁹ revealed four additional ones.¹⁰⁻¹³ These 11 articles reported response rates

from 32% to 100% (see Table 1). Mixed methods, follow-ups, and incentives may have impacted response rates.

The combination of e-mail, fax, and telephone survey methods has not been reported, based on our systematic review. Therefore, the purpose of this study was to evaluate physician response rates based on this multi-method approach.

Methods

As part of a feasibility study to determine the openness of physicians to using text messages for immunization reminders, a 20-question, IRB-approved survey was conducted with family physicians and pediatricians. Contact information was obtained from the local medical society. Surveys initially were administered by e-mail to 149 physicians utilizing SurveyMonkey®. Two follow-up e-mails were sent to non-respondents at two-week intervals. Surveys then were faxed to non-respondents, with a follow-up fax one week later. Finally, phone interviews were attempted with physicians who had not responded by e-mail or fax; each was called twice (Figure 1).

Results

Of the 149 eligible physicians, 102 completed the survey for a response rate of 68.5%. Of those who responded, 49 (48%) responded by e-mail, 25 (24.5%) by fax, and 28 (27.5%) by phone interview. The majority were male (60/94; 64%), White, not Hispanic (78/96; 81%), and age ranged from 27-73 (M = 48; SD= 9). The majority (60/94; 64%) reported having been in practice 10-29 years, followed by 0-9 years (15/94; 16%) and 30-50 years (18/94; 19%). Seventy-four percent (70/95) practiced family medicine, 24% practiced (23/95) pediatrics, and 2% (2/95) selected "other".

Sixty-seven respondents (66%) indicated current use of a fax machine in their practice, while 94% (96) indicated use of a computer with internet access.

Mode of response did not differ by gender ($\chi^2(2)=1.384$, $p=0.501$), specialization ($\chi^2(2)=1.089$, $p=0.580$), or years in practice ($F(2,91)=1.756$, $p=0.178$). In addition, mode of response was not related to the primary study question, willingness to use text messaging for immunization reminders ($\chi^2(4)=4.832$, $p=0.305$).

Discussion

Mailed surveys have long been a useful research method with average physician response rates reported in medical journals around 54%.¹⁴ However, mailed surveys can be time consuming and costly, with printing, envelopes, and postage estimated as high as \$11 per response.¹⁵ Telephone surveys have shown similar rates and cost per response,¹⁰ but are more time consuming and require an experienced interviewer.¹⁶ Current technology allows researchers to utilize a variety of newer methods, such as fax and e-mail, that are lower in cost and time requirements.

Lensing et al.¹⁷ gave physicians the option of receiving a survey by fax, telephone, or mail. Nearly twice as many physicians requested to be surveyed by fax than other modes, and of those, 87% responded (with fewer follow-ups). Faxing is more cost-effective than mail since no postage is required and surveys can be sent and returned quickly. The costs of designing and sending a fax survey were estimated as low as \$0.52 per response.¹⁸ However, there may be difficulty obtaining fax numbers, loss of anonymity of responders, and possible problems in contact, such as busy signals or inoperable machines.

Table 1. Physician response rates to surveys using a mixed-mode approach.

Article	N Surveyed	Group	Response Rate/Method	Overall Rate
Armstrong 2000 ³	72	All	73.6% mail 6.9% phone follow-up 19.4% face-to-face follow-up	100%
Beebe 2007 ¹⁰	245	Web/mail	62.9% web survey with mail survey follow-up	66.7%
	244	Mail/web	70.5% mail survey with web follow-up	
Fielding 2005 ⁴	98	All	Unknown initial distribution, fax return requested; mail follow-up with return envelope	96%
Grava-Gubins 2008 ⁵	35,270	E-mail group	29.9% e-mail	31.6%
	25,541	Mail group	34.1% mail	
Keating 2008 ⁶	286	\$20 incentive	52.1% mail with internet option, phone follow-up with offer of mail or fax replacement	60%
	292	\$50 incentive	67.8% mail with internet option, phone follow-up with offer of mail or fax replacement	
Leece 2004 ¹¹	221	Mail	58% mail with mail follow-up	51%
	221	E-mail	45% e-mail with e-mail follow-up and final mail follow-up	
McLaren 2000 ⁷	305	Pre-survey call	61.6% phone teaser, mail survey	61.5%
	316	Pre-survey postcard	61.4% mail teaser, mail survey	
McMahon 2003 ¹²	150	Mail	55% mail survey with mail follow-up, then fax or e-mail follow-up	53%
	150	Fax	57% fax survey with fax follow-up, then mail or e-mail follow-up	
	150	E-mail	47% e-mail survey with e-mail follow-up, then mail or fax follow-up	
Puleo 2002 ⁸	761	All	64% mail 10% with phone or e-mail reminder 17% phone follow-up	91%
Raziano 2001 ¹³	57	Mail	77% mail survey with mail follow-ups and final e-mail follow-up	65.8%
	57	E-mail	58% email survey with e-mail follow-ups and final mail follow-up	
Recklitis 2009 ⁹	136	\$20 incentive	81.6% mail with internet option, both e-mail and mail follow-up	73.7%
	135	Flash drive incentive	63.0% mail with internet option, both e-mail and mail follow-up	
	135	\$20 and flash drive incentive	76.3% mail with internet option, both e-mail and mail follow-up	

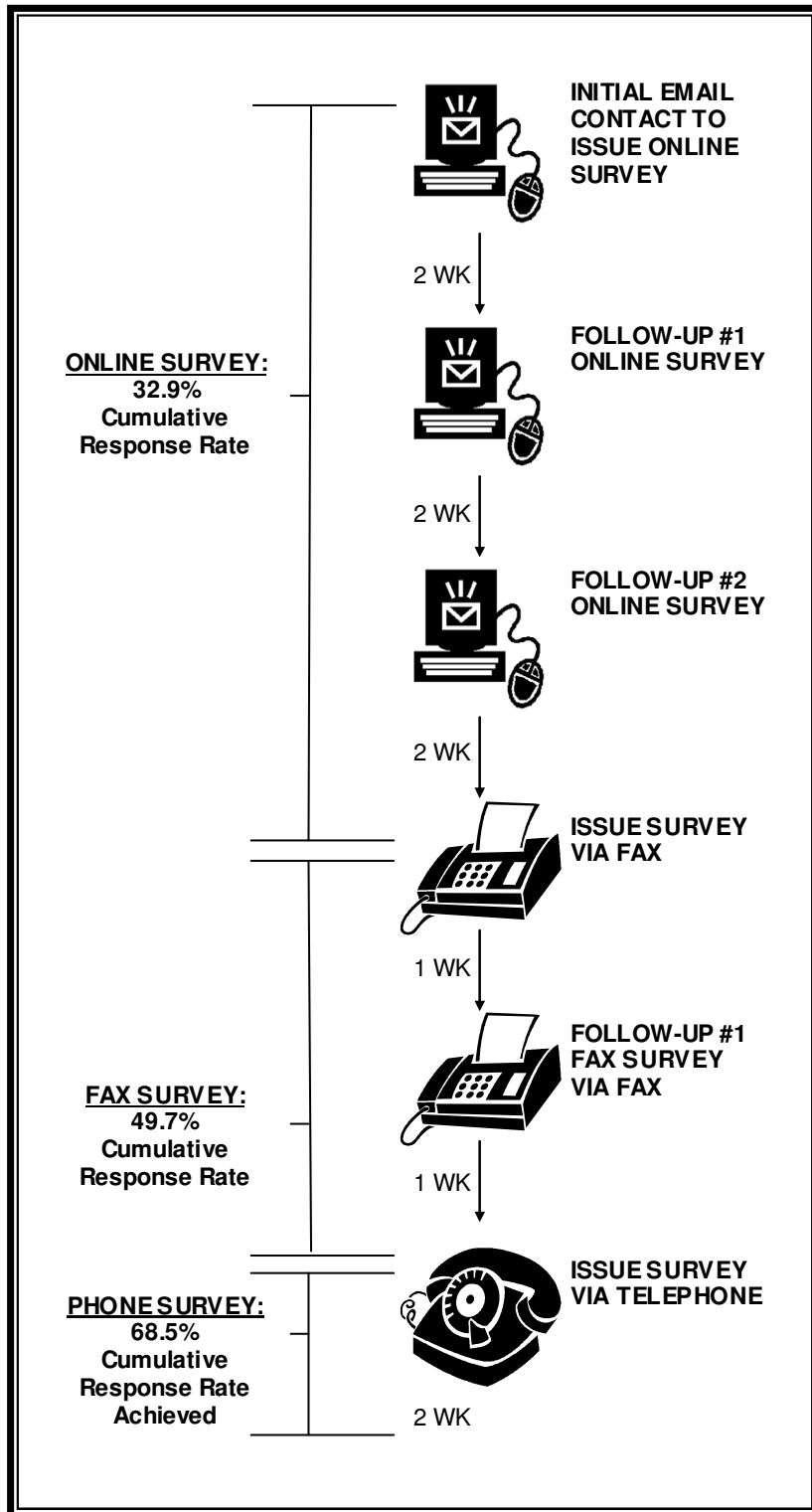


Figure 1. Mixed mode survey response rates and time between follow-ups

Email surveys can be distributed quickly and inexpensively. Kaplowitz¹⁵ suggested costs as little as \$1.32 per response, including computer programming and hosting costs for a web-based survey. Hundreds of surveys can be sent simultaneously by e-mail, while it is often necessary to fax surveys one at a time. Schaefer and Dillman¹⁹ reported returns came in more quickly by e-mail than mail and answers to open-ended questions were more complete. E-mail has similar limitations to faxing, however, physicians also may neglect to access their e-mail on a regular basis, slowing response time.

Assessing the combination of e-mail, fax, and telephone survey methods, after 10 weeks of data collection, our response rate fell within the average range of multi-method surveys of physicians. Our response rate potentially could have improved if more time were allocated to telephone follow-up. However, our intention was to maximize physician responses in a timely and cost-effective manner, and follow-up calls were very time-intensive. We, therefore, opted to discontinue after two attempts per person.

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Unfortunately, the phone-based studies in Table 1 did not indicate the number of attempts required before physician contact was achieved.

Response rates to phone interviews and fax surveys may have been impacted by clinic staff. Often administrative staff or nurses triage phone calls or fax messages and weed out any that are non-clinical or commercial. Therefore, it is possible some physicians never received the fax or phone message. Other study limitations included: a) the survey was administered in one geographic region; b) no comparison group was used; c) mail and face-to-face interview were not included; d) no incentive was provided, and e) the effects of the questionnaire content, study topic, and question structure were not assessed.

In conclusion, mixed-method survey including e-mail, fax, and telephone follow-up achieved a reasonable response rate from physicians. Future studies should use randomized groups to assess the cost- and time-effectiveness of different mixed-mode survey techniques.

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